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Introduction

1 After the Second World War, Christaller's central place theory was used as a rationale for retail planning in the Netherlands. Many local shopping centres had to provide basic goods in residential neighbourhoods. Somewhat larger shopping centres, although fewer in number were realized to serve (clusters of) neighbourhoods in their daily needs plus some additional non-daily needs. In medium sized and large cities, some district centres had to provide a large range of products, daily and non-daily. Finally, in the largest shopping centre, traditionally located in the downtown area, a large range of choice opportunities, especially fashion and more exclusive articles, should be available.

2 These four levels of shopping centres constitute a hierarchy of central places according to Christaller's central place theory (see e.g. Dennis *et al.*, 2002). The Dutch policy makers adopted this approach of retail planning in a period of reconstructing and expanding cities. That time, developing large-scale retail locations (e.g. hypermarkets) just outside the town was not allowed by the national government. However, starting in the 1970's, the policy was gradually liberalized. Centres selling hazardous or voluminous products were allowed at peripheral locations. Some 10-15 years later, furniture stores and builders' merchants were allowed as well (Borchert, 1995). As a consequence, most major cities in the Netherlands nowadays have at least one peripheral or large-scale retail area offering products in the furniture, do-it-yourself, and gardening branch.

3 Compared to many other European countries (see e.g. Davies, 1995; Guy, 1998), the development of out-of-town shopping areas in the Netherlands has been much more restricted. More recently, while policy makers in other countries focus at encouraging retail investments in town centres (see e.g. Jones and Hillier, 2000; Davies, 1995), the Dutch government (2004) decided to relax restrictions for all branches to invest in out-of-town locations. Now, local governments have to decide which branches will be allowed at peripheral locations. The likely effects of this more liberal policy are not readily evident. Of course, it will affect turnover figures in existing shopping centres, but it is hard to assess the magnitude of these effects because studies regarding the effects of out-of-town shopping centres in foreign countries (e.g. Howard, 1992; Marjanen, 1995; Guy, 1996) cannot be used. In foreign countries, out-of-town centres usually contain supermarkets and clothing stores, which will probably not be generally allowed by the Dutch local governments in out-of-town centres. Therefore, in this paper, we will try to get some insight into reactive behaviour of Dutch customers to increasing supply at peripheral shopping locations.

4 This paper is organized as follows. In the next section, we will introduce our research approach to measure how consumer behaviour might be affected by opening a new mega shopping centre in the periphery of a medium sized Dutch town. In section 3, we will describe the collection of data we need to estimate the model of consumer behaviour. The specification of the model and the results of model estimation will be described in section 4. In section 5, we will discuss the validity of predicted effects of introducing different peripheral shopping centres. Finally, in section 6, conclusions will be drawn and directions for further research will be suggested.

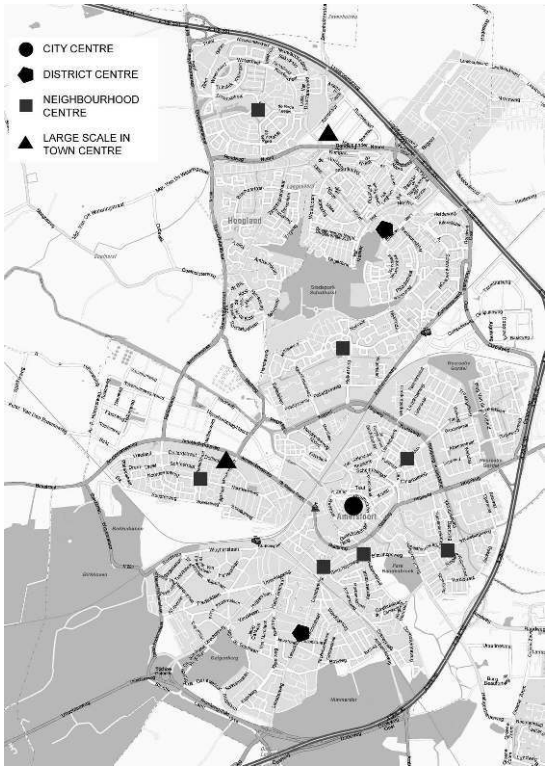
Approach

5 We adopted the so-called stated choice approach (see e.g. Louviere, Hensher and Swait, 2000) to get insight into the effects of opening a peripheral shopping centre. The stated choice approach has widely been applied in studies of retail planning (e.g. Oppewal, Louviere and Timmermans, 1994), transportation (e.g. Dagsvik, 2002; Hensher *et al.*, 2003), housing (e.g. Wang and Li, 2004), tourism (e.g. Dellaert, Borgers and Timmermans, 1997) and leisure (e.g. Kemperman *et al.,* 2000).

6 In general, the stated choice approach implies the following steps. First, a context has to be decided on. For example, we might choose a particular city to investigate our problem or choose for a particular type of city (e.g. medium sized cities). In the second step, relevant variables and their levels have to be chosen. In this study, these variables define a peripheral mega centre. Next, using the relevant variables, imaginary peripheral mega centres have to be generated. These imaginary mega centres will in turn be presented to individual customers, who have to state how many times they would choose each mega centre. Finally, a choice model can be used to estimate the effect of the mega centre and its variables.

7 In this study, a medium sized city in the centre of the Netherlands (Amersfoort) was selected. This city is considered representative of Dutch medium sized cities in terms of retailing and consumer behaviour. Amersfoort has approximately 115,000 inhabitants and provides all typical types of shopping centres except a peripheral centre (see Figure 1).

Figure 1. Shopping centres in Amersfoort.



8 The variables and associated levels presented in Table 1 were considered to be of interest for customers as well as real estate developers. For customers, it is commonly known that aspects like price, distance and supply of branches are important. Aspects like design and entertainment were assumed to be especially of interest for developers as possible means to attract more customers. The levels of the variables were combined to create imaginary peripheral centres. In addition to the variables presented in Table 1, the new peripheral mega centre was assumed to

- have ample supply of well-known shops within each available branch,
- be easily accessible by car and public transport,
- have ample parking facilities free of charge,
- have basic sanitary facilities for free,
- have a basic food & coffee corner,
- have signposting and information boards.

Table 1. Selected variables to define the imaginary peripheral shopping centre.

Variable		Levels
1	Price-product quality ratio	- Low - Medium - High
2	Distance from home to centre	- 10-minute drive - 20-minute - 30-minute
3	Design and ambiance	- Regular - Luxurious
4	Entertainment	- Not available - Available
Branches available		
5	- Home electronics	- Yes - No
6	- Toys	- Yes - No
7	- Sporting goods & camping articles	- Yes - No
8	- Cars & bikes	- Yes - No
9	- Furniture & home decoration	- Yes - No
10	- Do it yourself products	- Yes - No

9 These characteristics are rather common to existing peripheral shopping centres in the Netherlands. Most variable levels presented in Table 1 already exist, however the entertainment component is quite rare at this moment. Furthermore, branches like furniture & home decoration and do-it-yourself can be found in most peripheral shopping centres. Other branches are less common, but are expected to become increasingly available as the Dutch government relaxed restrictions for these branches in peripheral shopping centres.

10 The likely effects of opening a peripheral shopping centre will be measured by presenting the imaginary peripheral shopping centres to a random sample of Amersfoort's inhabitants. Given the variables presented in Table 1, in total $3^2 * 2^8 = 2304$ different realizations of the new peripheral centre can be composed. This number is far too large to handle. Therefore, some orthogonal fraction of the full factorial design is usually selected to reduce the number of realizations. A full factorial design allows unbiased estimation of all so-called higher order effects. Higher order effects represent the specific effects of combinations of variable levels, like for example "distance from home to centre is a 30 minute drive", "a luxurious design and ambiance", and "entertainment available". As these combinations of three or more variables are usually insignificant, the number of realizations can be reduced dramatically. In this study, a design was chosen that only allows the estimation of each variable level (main effects) and only one interaction effect between two variables (price-quality and entertainment). This means that only these main effects and the one interaction effect should vary independently from each other. This resulted in a set of 27 different realizations. For more information on statistical designs, we refer to Dey (1985). To keep the number of imaginary shopping centres small, other two-way interactions were not considered in this study.

11 Prior to measuring effects of a new mega centre, respondents were asked to estimate how many times they had recently visited each of the existing shopping centres in Amersfoort for buying non-daily products. Small neighbourhood centres only offering daily products were assumed to be of insignificant influence in this context. Next, each respondent was asked to imagine that a new peripheral centre (one of the 27 imaginary centres) would exist and estimate how many times he would have visited each shopping centre (now including the new peripheral one).

12 As the fractional design consisted of 27 different peripheral mega centres, this task should be repeated 27 times for each respondent. However, this was assumed to be a too demanding task for each respondent and therefore each task was split randomly into three parts. Each part, consisting of nine choice situations, was presented to a respondent. This implies that each respondent had to respond to nine imaginary choice situations. As a rule of thumb, 30 respondents need to respond to each imaginary choice situation. Ideally, this means that we need 3 x 30= 90 respondents to collect the data. Response data under current circumstances as well as under imaginary circumstances were used to estimate a multinomial logit model.

Data collection

13 In April 2004, 600 questionnaires were distributed in the city of Amersfoort. A number of representative residential areas in Amersfoort was selected. Questionnaires were randomly delivered in letterboxes in each residential area. Each questionnaire consisted of an introduction, some questions related to socio-economic variables, choice frequencies during the first three months of 2004 under current circumstances (see Table 2), and 9 situations including an imaginary peripheral centre (see Table 3 for an example). The selection of the 9 imaginary centres was varied randomly over respondents to avoid possible distorting effects due to coincidental combinations of tasks.

14 Respondents were invited to return the completed questionnaire within 2 weeks in the stamped addressed envelope. As an incentive, three gift-sets consisting of 3 bottles of wine each were raffled amongst respondents.

15 In total, 94 questionnaires were returned of which 78 could be used. Although this number is less than 90, it is still large enough to estimate the logit model. In Table 4, some characteristics of the sample are displayed. Just a few more men than women responded. Most of the respondents were aged 20 to 65 and almost two-third of the sample is highly educated. It can be concluded that this sample does not represent the Amersfoort population. However, as the main objective of this study is to test a method of assessing the impact of a new mega centre, this is not really a problem.

Table 2. Measurement of current choice frequencies.

How many times did you visit each shopping centre to buy non-daily goods during the first three months of 2004?	
- City centre	..... times
- District centre #1	..... times
- District centre #2	..... times
- Neighbourhood centre #1	..... times
- Neighbourhood centre #2	..... times
- Neighbourhood centre #3	..... times
- Neighbourhood centre #4	..... times
- Neighbourhood centre #5	..... times
- Neighbourhood centre #6	..... times
- Neighbourhood centre #7	..... times
- Large scale in town centre #1	..... times
- Large scale in town centre #2	..... times
- Other shopping centres	..... times

Table 3. Example of choice task (shaded area: invariant attributes).

Suppose the Mega Centre described in the right column would have existed, how many times would you have visited each shopping centre to buy non-daily goods during the first three months of 2004?		Description of new Peripheral Mega Centre	
- Peripheral Mega Centre	.....times	Price-product quality ratio	medium
- City centre	.....times	Distance from home to mega centre	10 minute drive
- District centre #1	.....times		
- District centre #2	.....times	Design and ambiance	luxurious
- Neighbourhood centre #1	.....times	Entertainment	not available
- Neighbourhood centre #2	.....times	Branches available	home electronics, do it yourself
- Neighbourhood centre #3	.....times		
- Neighbourhood centre #4	.....times	*(invariant)*	
- Neighbourhood centre #5	.....times	Supply of shops	all well-known shops
- Neighbourhood centre #6	.....times	Accessibility	easy by car and PT
- Neighbourhood centre #7	.....times	Parking facilities	ample, free of charge
- Large scale in town centre #1	.....times	Sanitary facilities	basic, for free
- Large scale in town centre #2	.....times	Food and beverages	food & coffee corner
- Other shopping centres	.....times	Signposting, information	yes

Table 4. Some characteristics of respondents.

Gender	male female	54 % 46 %
Age	20-44 45-64 65 +	52 % 40 % 8%
Education level	low medium high	8 % 28 % 63 %

Model specification and estimation

16 To estimate the probability the peripheral mega centre or one of the existing centres will be chosen, a multinomial logit (MNL) model is specified (e.g. McFadden, 1974 or Ben-Akiva and Lerman, 1985). This model is defined as follows:

$p_i = \exp(V_i) / \{\Sigma_{i'} \exp(V_{i'}) + \exp(V_{pmc})\}$

where

p_i is the probability existing shopping centre *i* will be chosen,

V_i is the structural (non random) utility of existing shopping centre *i*,

V_{pmc} is the structural utility of the peripheral mega centre (*pmc*).

17 The structural utility of existing shopping centres is defined as:

$V_i = \alpha_i + \Sigma_k W_{ik}$

where

α_i represents the alternative specific utility of shopping centre *i*,

W_{ik} is a cross effect of branch *k* in the mega centre on centre *i*.

18 The utility of each existing shopping centre was measured by an alternative specific constant, which for the downtown shopping area of Amersfoort was arbitrarily set to zero. As the other existing shopping centres are less attractive than the Amersfoort downtown shopping centre, we expect these alternative specific constants to be negative. The cross effects measure the effects of the availability of branches in the mega centre on the existing shopping centres. The cross effects are defined as:

$W_{ik} = \Sigma_d \gamma_{kd} X_{ik} Z_{kd}$

where

X_{ik} is the floorspace (x 100 m^2) of branch *k* in shopping centre *i*,

Z_{kd} = 1 if the peripheral mega centre is located at distance *d* AND offers branch *k*,

= 0 otherwise,

γ_{kd} is a distance specific parameter for branch *k*,

d refers to distance categories (10, 20, or 30 minutes).

19 If the mega centre offers branch *k* and shopping centre *i* does not offer this branch, the cross effect is equal to zero (because $X_{ik} = 0$). However, if the floorspace of branch *k* in shopping centre *i* is greater than zero, parameter γ measures the strength of the cross effect for branch *k* between centre *i* and the peripheral mega centre. If γ_{kd} is different from zero for at least one branch *k,* the standard MNL model violates the independence of irrelevant alternatives (IIA) property. If the γ-parameter for a particular branch is negative, existing shopping centres offering a large floorspace in this branch will be relatively more in competition with the new mega centre than existing shopping centres not or marginally offering this branch. Positive γ-parameters are possible as well and suggest that there is relatively less competition between existing shopping centres and the peripheral mega centre.

20 The structural utility of the peripheral mega centre is measured by an alternative specific parameter α_{pmc} and a weighted summation of the available branches. In formula :

$V_{pmc} = \alpha_{pmc} + \Sigma_k \beta_k Z_k + Z_l \delta_l Y_l + \Sigma_m \theta_m I_m$

21 Where

α_{pmc} represents the alternative specific utility of the peripheral mega centre.

Z_k = 1 if the mega centre offers branch *k*,

= 0 otherwise,

Σ_k is a parameter for branch *k* in the mega centre,

Y_l is a dummy variable,

δ_l is a parameter for dummy variable *l*,

I_m is an interaction variable,

θ_m is a parameter for interaction variable *m*.

22 The dummy variables represent the levels of the variables price-quality ratio, distance from home to peripheral mega centre, design and ambiance, and entertainment. The former two are three-level variables, the latter two are two-level variables. For the three-level variables, the first level was coded (0, 0), the second (1, 0), and the third (0, 1). Two-level variables were coded respectively (1) and (0). The interaction between the price-quality variable and the entertainment variable was coded by the product of the corresponding indicator variables, yielding two additional interaction variables (first dummy of price-quality ratio * entertainment dummy ; second dummy of price-quality ratio * entertainment dummy).

23 The parameters of the (unordered) MNL model were estimated by maximum likelihood estimation. The software package LIMDEP (Greene, 2003) was used to estimate the parameters. Rho^2, a goodness-of-fit measure, is equal to 0.207, indicating a reasonable fit of the model. The estimated parameters are displayed in Table 5. The alternative specific parameter for the Amersfoort city centre was set arbitrarily to zero. All other alternative specific effects are less than zero, implying that each other existing shopping centre is less attractive than the city centre. The neighbourhood centres are the least attractive centres, as might be expected.

Table 5. Estimated parameters.

Variable		parameter	p[|Z|>z]
Alternative specific constants (α's):			
- City centre		0.0	1)
- District centre #1		-0.731	0.000
- District centre #2		-0.892	0.000
- Neighbourhood centre #1		-2.209	0.000
- Neighbourhood centre #2		-2.311	0.000
- Neighbourhood centre #3		-2.828	0.000
- Neighbourhood centre #4		-2.937	0.000
- Neighbourhood centre #5		-3.353	0.000
- Neighbourhood centre #6		-3.791	0.000
- Neighbourhood centre #7		-5.059	0.000
- Large scale in town centre #1		-0.904	0.000
- Large scale in town centre #2		-2.156	0.000
- Other shopping centres		-0.609	0.000
- Peripheral Mega Centre		-1.565	0.000
Attributes Peripheral Mega Centre (δ's):			
- Price/quality:	1) low	0.0	1)
	2) medium	---	2)
	3) high	-1.472	0.000
- Distance	1) 10 minutes	0.0	1)
	2) 20 minutes	-0.667	0.000
	3) 30 minutes	-1.315	0.000
- Design & ambiance	1) regular	---	2)
	2) luxurious	0.0	1)
- Entertainment	1) no	---	2)
	2) yes	0.0	1)
Interaction effects (θ's):			
- Medium price-quality AND no entertainment		-1.229	0.000
- High price-quality AND no entertainment		1.001	0.015
Availability of branches (β's):			
- Home electronics		0.479	0.000
- Toys		0.303	0.002
- Sporting goods & camping articles		0.534	0.000
- Cars & bikes		-0.278	0.054
- Furniture & home decoration		1.104	0.000
- Do-it-yourself		0.322	0.000
Cross effects (γ's):			
- Cars and bikes at 10 minutes		-0.015	0.023
- Cars and bikes at 20 minutes		---	2)
- Cars and bikes at 30 minutes		---	2)

1) parameter arbitrarily set to 0.0; 2) not significant at 0.05 level

24 According to the alternative specific parameter for the peripheral mega centre, this centre is less attractive than the existing district centres. However, this specific parameter represents the attractiveness of the mega centre excluding the attractiveness of available branches. The attractiveness of the peripheral mega centre can be increased or decreased by manipulating the attributes of this centre. For each three-level attribute, the first level was considered the base level, implying that the part worth utility of this level is equal to zero. As can be seen in Table 5, the second price-quality level does not differ from the first. However, the part worth utility of the third price-quality level is rather negative. So, the respondents do not like the high price-quality ratio. The shorter the distance from home to the peripheral mega centre, the more attractive the mega centre will be. For the two-level attributes, the second level was set to zero. The main effect of the variables design & ambiance and entertainment are non-significant. However, entertainment can influence the attractiveness through the interaction with the price-quality variable. In the case of the medium price-quality level and no entertainment, the utility of the peripheral mega centre decreases considerably, while the utility increases in the case of a high price-quality level and no entertainment. Apparently, respondents expect entertainment in the case of a medium price-quality level while they do not in the case of a high price-quality level.

25 All branches contribute to the attractiveness of the peripheral mega centre, except the cars & bikes branch. Respondents do not like this branch in a mega centre. An alternative explanation for this effect might be that respondents are loyal to their own car or bike dealer and therefore do not expect to visit the mega centre for buying a car or bike. The branch furniture and home decoration seems to be very successful in attracting customers to the mega centre.

26 Cross effects were estimated for all branches at all three distance levels. Only one cross effect appeared to be significant : cars & bikes if the mega centre is located at a 10 minute drive. This means that if the travel time to the mega centre is 10 minutes, the utility of each existing centre decreases 0.015 units for each 100 m^2 cars & bikes supply the centre offers. This way, shopping centres offering a large cars & bikes supply will relatively be more affected by the cars & bikes branch in the peripheral mega centre than shopping centres offering no or small cars & bikes supply.

Application and validation

27 To assess the validity of the model, we applied the model to predict the number of times each shopping centre will be chosen before and after a peripheral mega centre is realized. In the first application, it is assumed that a very attractive mega centre will be realized. The characteristics of this mega centre are defined as follows : medium price-quality ratio, entertainment available, branches available : home electronics, toys, sporting goods & camping articles, furniture & home decoration, and do-it-yourself products. Note that the mega centre is composed such that its utility is maximized. The probability each shopping centre will be visited is displayed in Table 6 for customers living at each of the three distances : a 10, 20, and 30 minute drive. Note that these scenarios are rather unrealistic as all customers have to travel the same amount of time to the mega centre. However, these scenarios show that the likely effects of the mega centre decrease with increasing distance to the mega centre, confirming the face validity of the model. To compare, the probabilities before opening the mega centre are displayed as well in Table 6. If all customers would live at a short distance (a 10 minute drive) from this attractive mega centre, the probability of visiting the mega centre is almost 50 %. This is a considerably larger probability than visiting the downtown city centre of Amersfoort. This might be expected, because in this case the travel distance to the city centre and (most) other existing shopping centres will be more than a 10 minute drive. In this (unrealistic) situation, the mega centre offers a very extended supply of goods at a very short distance. The probability of visiting any existing shopping centre reduces by approximately 50 %. If all customers would live at 20 minutes driving time from the mega centre, the probability the mega centre will be visited is still larger than visiting Amersfoorts' downtown city centre. In this case, the number of customers visiting each existing centre will be reduced by approximately one third. In case all customers would live at a 30 minutes drive from the mega centre, the share of customers visiting the mega centre will be somewhat smaller than visiting the city centre of Amersfoort. However, the new mega centre will still be the second most attractive shopping centre. Note that the peripheral mega centre does not offer cars & bikes. Therefore, cross effects will not affect the choice probabilities. In this case, the choice probabilities of all existing shopping centres decrease equally, relatively spoken.

Table 6. Predicted choice probabilities of a very attractive peripheral mega centre (in %).

Distance to mega centre	no mega centre	10 minutes	20 minutes	30 minutes
- City centre	29.9	15.2	19.9	23.7
- District centre #1	14.4	7.3	9.6	11.4
- District centre #2	12.3	6.2	8.2	9.7
- Neighbourhood centre #1	3.3	1.7	2.2	2.6
- Neighbourhood centre #2	3.0	1.5	2.0	2.4
- Neighbourhood centre #3	1.8	0.9	1.2	1.4
- Neighbourhood centre #4	1.6	0.8	1.1	1.3
- Neighbourhood centre #5	1.0	0.5	0.7	0.8
- Neighbourhood centre #6	0.7	0.3	0.4	0.5
- Neighbourhood centre #7	0.2	0.1	0.1	0.2
- Large scale in town centre #1	12.1	6.1	8.1	9.6
- Large scale in town centre #2	3.4	1.8	2.3	2.8
- Other shopping centres	16.3	8.3	10.9	12.9
- Peripheral Mega Centre	--	49.3	33.3	20.7

28 Table 7 demonstrates the influence of the cross effect between the availability of the cars & bikes branch in the mega centre and the existing centres offering this branch. This table represents choice probabilities for a mega centre offering only cars and bikes at a 10 minutes distance, medium price-quality level, and no entertainment. This mega centre would attract only a small proportion of the customers. Note that in fact only two existing shopping centres face a significant decreasing probability of being visited : the downtown city centre and one of the large scale in-town centres. These are the two existing centres offering a large supply in the cars & bikes branch. Due to the cross effects, the existing centres offering no cars & bikes supply are not in competition with the mega centre. The model even predicts small increases in choice probabilities for these existing centres. Of course, increasing choice probabilities for existing shopping centres are not expected. This can be considered a misprediction of the model within its error margins.

Table 7. Predicted choice probabilities of a cars & bikes peripheral centre in ‰.

Distance to mega centre	no mega centre	10 minutes
- City centre	29.9	28.6
- District centre #1	14.4	14.8
- District centre #2	12.3	12.8
- Neighbourhood centre #1	3.3	3.4
- Neighbourhood centre #2	3.0	3.0
- Neighbourhood centre #3	1.8	1.8
- Neighbourhood centre #4	1.6	1.7
- Neighbourhood centre #5	1.0	1.1
- Neighbourhood centre #6	0.7	0.7
- Neighbourhood centre #7	0.2	0.2
- Large scale in town centre #1	12.1	9.8
- Large scale in town centre #2	3.4	3.6
- Other shopping centres	16.3	17.0
- Peripheral Mega Centre	--	1.5

29 The probabilities shown in tables 6 and 7 are specific for customers living at a particular distance from the peripheral mega centre. In reality, however, customers live at all distances. To simulate real world choice probabilities more realistic, we assumed that 20, 40, and 40 percent of the customers live at a 10, 20, and 30 minute drive respectively. Several peripheral locations in Amersfoort roughly generate this distribution of travel times. Of course, if a specific location would have been selected by the local government, effects could have been assessed more accurately. Table 8 displays the choice probabilities for the type of peripheral mega centre that exists in a number of Dutch

cities. These peripheral mega centres offer the furniture & home decoration branch and the do-it-yourself branch, in general at a medium price-quality level and no entertainment. According to the model, this "traditional" peripheral mega centre would attract approximately 4 % of all shopping visits for non-daily goods.

Table 8. Predicted choice probabilities of a "traditional" peripheral mega centre (in %).

Distance to mega centre	no mega centre	10 (20%), 20 (40%), 30 (40%) minutes
- City centre	29.9	28.8
- District centre #1	14.4	13.9
- District centre #2	12.3	11.8
- Neighbourhood centre #1	3.3	3.2
- Neighbourhood centre #2	3.0	2.9
- Neighbourhood centre #3	1.8	1.7
- Neighbourhood centre #4	1.6	1.5
- Neighbourhood centre #5	1.0	1.0
- Neighbourhood centre #6	0.7	0.6
- Neighbourhood centre #7	0.2	0.2
- Large scale in town centre #1	12.1	11.7
- Large scale in town centre #2	3.4	3.3
- Other shopping centres	16.3	15.7
- Peripheral Mega Centre	--	3.7

30 Although these "traditional" peripheral mega centres exist in a number of Dutch cities, data indicating the direct effects of these centres on the number of visitors in the existing shopping centres do not seem to be available. So, unfortunately, it seems impossible to validate our predictions by means of external data.

Conclusions and recommendations

31 Recently, the Dutch policy regarding peripheral shopping centres has become more liberal. The effects of new retail developments in peripheral areas on downtown (and other) shopping centres are hard to assess. Opponents of a more liberal policy especially fear for the viability of the downtown shopping centre. Therefore, the main purpose of this study was to develop and apply a method to assess the likely effects of out-of-town shopping areas on existing shopping areas.

32 In fact, we used the stated choice approach to assess the effects of opening a peripheral mega centre in a Dutch city (Amersfoort). By presenting a set of imaginary realizations of a peripheral mega centre, residents of the city were asked to state how many times they would visit the new mega centre. Although stated preference and stated choice experiments are commonly applied in marketing and transportation, scholars in the field of retail planning keep questioning the validity of the outcomes of these experiments. However, Louviere, Hensher and Swait (2000, p. 379) report some promising correspondence in stated preferences and revealed preferences regarding shopping mall choices. Ideally, to get insight into the external validity of the model in this study, we need data regarding the number of visitors of the downtown centre during a period before and after the opening of a new peripheral mega centre. Unfortunately, as far as we know, this kind of data is not available for Amersfoort or other Dutch cities. Furthermore, the sample of respondents used in this study is rather small and does not represent the Amersfoort population very well. So, beyond approving the face validity of parameters and simulations, it is hard to prove the external validity of the model without further data collection in the context of the present study. The internal validity was shown by

simulating the effects of some realizations of a mega centre at different travel times and for different compositions of branches.

33 In addition to assessing the effects of a particular peripheral mega centre, the proposed method can be used to support decision-making regarding the selection of branches. For example, if a developer, due to floor space restrictions has to choose between two particular shops – e.g. sporting goods & camping articles and toys – the first should be chosen in the mega centre.

34 Another important finding is that the design & ambiance variable is not significant, meaning that the respondents are not sensitive to a more or less luxurious presentation of the mega centre. The entertainment variable is only significant in combination with the price and quality variable. Of course, these findings need further investigation in future research.

35 The proposed model can easily be extended by incorporating variables related to the attractiveness of existing centres and by incorporating distances between residential areas and existing shopping centres. Now, each existing shopping centre is represented by a specific constant. By adding variables like floorspace, price to quality ratio, etcetera, effects of changing an existing shopping centre could be assessed as well. Especially adding a variable representing the travel time to each shopping centre would be effective to cancel out the effects of spatially non-representative distributed respondents. In addition, the model would become more transferable to other cities. Of course, the variables related to the new peripheral mega centre could be expanded as well. For example, information about the number of outlets or floorspace per branch could be incorporated. Also, including interaction effects could assess the special effects of offering combinations of branches. However, this is only possible at the cost of an increasing number of imaginary shopping centres.

36 In this study, we used the traditional paper & pencil method to collect data. Respondents had to fill out questionnaires and return them by mail. Nowadays, the internet has become a promising alternative to this traditional method. Different imaginary realizations of a new mega centre can be presented on the screen one by one. A disadvantage of using the internet might be that some population groups have less access to the internet. On the other hand, using the internet will reduce the costs of data collection.

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ABSTRACTS

Recently, retail planning policy in the Netherlands has become much more liberal, probably stimulating the development of new (types of) out-of-town retail centres. This raises the question whether these new out-of-town retail centres will threaten existing retail centres. The purpose of this paper is to present a method to assess the likely effects of new peripheral retail centres on

existing retail structures.
The method is based on the stated choice approach. Different realizations of an imaginary peripheral mega shopping centre are presented to respondents. The respondents have to estimate the number of times each existing shopping centre and the new imaginary peripheral centre would have been visited if the imaginary centre had existed. The following variables were used to define the imaginary peripheral retail centre: supply of six branches, distance from home to the peripheral centre, price-product quality ratio, design and ambiance, and entertainment. The results show that depending on its characteristics, a peripheral mega centre can have severe impact on existing shopping centres.

Onlangs is het Nederlandse beleid ten aanzien van het ontwikkelen van perifere winkelcentra aanzienlijk versoepeld. Men maakt zich zorgen over de mogelijke gevolgen hiervan voor de bestaande winkelcentra. Het doel van deze studie is een methode te presenteren waarmee de gevolgen van nieuwe perifere winkelcentra ingeschat kunnen worden.
De methode is gebaseerd op de “stated choice” benadering. Respondenten krijgen verschillende realisaties van denkbeeldige perifere winkelcentra voorgelegd. Voor elk denkbeeldig perifeer winkelcentrum dienen ze aan te geven hoe vaak ze dit centrum en elk bestaand centrum zouden bezoeken indien het denkbeeldige centrum zou bestaan. De kenmerken van de denkbeeldige centra zijn bepaald aan de hand van de volgende variabelen : aanbod (zes branches), afstand van woning tot centrum, prijs-kwaliteit verhouding, ontwerp en sfeer, vermaak. De resultaten geven aan dat, afhankelijk van de kenmerken, het perifere winkelcentrum aanzienlijke gevolgen kan hebben voor de bestaande winkelcentra.

INDEX

Keywords: peripheral mega retail centres, stated choice approach, multinomial logit model
motsclesnl perifere winkelcentra, “stated choice” benadering, multinomiaal logit model

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